



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/667,186	09/21/2000	Robert K. Jenner	1009-0100	8355

25263 7590 04/29/2004

J GRANT HOUSTON  
AXSUN TECHNOLOGIES INC  
1 FORTUNE DRIVE  
BILLERICA, MA 01821

EXAMINER

JIMENEZ, MARC QUEMUEL

ART UNIT	PAPER NUMBER
----------	--------------

3726

DATE MAILED: 04/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/667,186	<b>Applicant(s)</b> JENNER ET AL.	
	<b>Examiner</b> Marc Jimenez	<b>Art Unit</b> 3726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 27 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3,5,20 and 21 is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6-19 and 22-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1) <input type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br/>Paper No(s)/Mail Date _____.</p> | <p>4) <input type="checkbox"/> Interview Summary (PTO-413)<br/>Paper No(s)/Mail Date. _____.</p> <p>5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6) <input type="checkbox"/> Other: _____.</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1, 2, 4, 9-12, 16-18, and 24** are rejected under 35 U.S.C. 102(e) as being anticipated by Bone (6,273,483).

Bone teaches a component manipulation system, comprising: first **10a** and second **10b** opposed jaws for cooperatively engaging a component **14**, a first x-axis detection system (col. 6, lines 44-50, each of the fingers are controlled by actuators **60** which provide movement in the x,y,z axes, each of the actuators **60** which control movement in the x,y,z directions are controlled by the programmable gripper. Therefore, each of the actuators **60** have a detection system to control the respective positions along the x,y,z axes) for detecting an x-axis position of the first jaw **10a**, a first y-axis detection system (col. 6, lines 44-50) for detecting a y-axis position of the first jaw **10a**, a second x-axis position detection system for detecting an x-axis position of the second jaw **10b**, a second y-axis position detection system for detecting a y-axis position of the second jaw **10b**, a first x-axis actuator (see fig. 6 where there are shown actuators **60** allowing movement for each finger in the x,y,z axes, see also col. 7, lines 18-23) for

Art Unit: 3726

positioning the first jaw **10a** along the x-axis, a first y-axis actuator (see fig. 6 where there are shown actuators **60** allowing movement for each finger in the x,y,z axes, see also col. 7, lines 18-23) for positioning the first jaw along the y-axis, a second x-axis actuator (see fig. 6 where there are shown actuators **60** allowing movement for each finger in the x,y,z axes, see also col. 7, lines 18-23) for positioning the second jaw **10b** along the x-axis, and a second y-axis actuator (see fig. 6 where there are shown actuators **60** allowing movement for each finger in the x,y,z axes, see also col. 7, lines 18-23) for positioning the second jaw **10b** along the y-axis, wherein a combination of the first x-axis position detection system, the first y-axis position detection system, the first x-axis actuator, the first y-axis actuator for the first jaw **10a** and the second x-axis position detection system, the second y-axis position detection system, the second x-axis actuator, and the second y-axis actuator for the second jaw enable the first jaw and the second jaw to be independently positioned in both the x-axis and y-axis directions simultaneously (col. 5, lines 53-54).

Regarding the limitations that the system is adapted to engage an optical component (as recited in claims 1 and 2), a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

Regarding claim 4, note the stages in fig. 6.

Regarding claims 9, 10, 17, and 18, Bone teaches a control system to drive the actuators in response to the position detection system (col. 6, lines 45-46).

Regarding claims 11 and 24, the jaws extend downward (fig. 4).

Regarding claim 12, note the stages (above numeral **60** representing the actuator for the z-axis).

Regarding claim 16, the assembly above each of the jaws **14a** and **14b** are considered "actuators". The "actuators" have x and y axis movement controllers **60**.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 6, 8, and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bone in view of Althaus et al. (5,255,333).

Bone teaches the invention cited with the exception of having a jaw heater for heating at least one of the first and second jaws.

Althaus et al. teach a jaw heater (col. 3, lines 51-64) for heating at least one of first and second jaws **13**.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided the invention of Bone with a jaw heater, in light of the teachings of Althaus et

Art Unit: 3726

al., in order to provide means to heat a solder that is used to attach a component to a substrate (as suggested by Althaus et al. at col. 3, lines 51-64).

5. **Claims 7 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bone in view of Althaus et al. as applied to claims 6 and 22 above, and further in view of Kalina (4,214,353).

Bone/Althaus et al. teach the invention cited with the exception of the heating done by laser. Instead, Althaus et al. teach heating the jaws by induction (col. 3, lines 51-64 of Althaus et al.).

Kalina teaches heating by a laser (col. 3, lines 21-24). Furthermore, Kalina teaches that laser heating is an equivalent heating means as induction heating. Therefore, because laser and induction heating are art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute induction heating for laser heating.

6. **Claims 13, 14, 25, and 26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bone.

Bone teach the invention cited with the exception of using voice coil systems for the actuator or optical encoder and grading for the detection system.

The particular type of actuator or detection system used is deemed to be an obvious matter of design choice because the use of a voice coil system for an actuator or an optical encoder and grading for a detection system would work equally as well with the actuators and

Art Unit: 3726

detection system of Bone. There is no evidence of unexpected results achieved or benefits attained by using the claimed actuators and detection system versus the actuators and detection system taught by Bone. Furthermore, official notice is taken that it is well known in the art to have used voice coil actuators and optical encoder and grading for a detection system in order to provide accurate and reliable positioning and position detection.

7. **Claims 15 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Bone in view of Novak et al. (5,996,437).

Bone teaches the invention cited with the exception of having a substrate stage.

Novak et al. teach a substrate stage (fig. 1a).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided the invention of Bone with a substrate stage, in light of the teachings of Novak et al., in order to position a workpiece relative to the jaws.

#### *Allowable Subject Matter*

8. **Claims 3, 5, 20, and 21** allowed.

#### *Response to Arguments*

9. Applicant's arguments filed 1/28/04 have been fully considered but they are not persuasive.

10. Applicant argues that each of the independent claims requires multi axis position detection systems for the jaws which is not shown by the Bone patent. It is noted however, that

Art Unit: 3726

each of the jaws **10a-b** of Bone are individually movable in the x,y,z axes by three respective actuators **60** for each jaw **10a-b**. The jaws or "fingers" as Bone calls them allows the gripper to manipulate the position and orientation of the sheet **14** in 3D space without letting go of it (col. 7, lines 7-10). Bone further teaches that the position of the jaws are program controlled and that the robot must know the approximate location of the workpiece and have some information relating to the shape and location of the slots (col. 6, lines 45-50). Therefore, Bone clearly suggests a position detection system for the jaws because the position of the jaws are controlled by a programmable controller which directs the position of the jaws with respect to the workpiece. The jaws are not just randomly moved to a particular position, there is detection performed for each of the three actuators attached to each jaw because the positions where the actuators move are known. Furthermore, in col. 7, lines 14-16, Bone teaches that fine adjustments are made in order to line up the parts during an assembly process. Therefore, because fine adjustments are made, there is a detection system which allows fine adjustments to be made.

11. Applicant argues that the Bone jaws **10** are simply used for holding the workpiece and the present invention uses the jaws for manipulating or positioning the workpiece. It is noted however, that in col. 2, lines 12-15, the gripper is used to pickup, hold transport, and drop-off objects, therefore, the gripper is used for positioning. See also col. 1, lines 21-22 where the gripper is described as a "manipulator".



***Conclusion***

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Interviews After Final***

13. Applicant note that an interview after a final rejection will not be granted unless the intended purpose and content of the interview is presented briefly, in writing (the agenda of the interview must be in writing) to clarify issues for appeal requiring only nominal further consideration. Interviews merely to restate arguments of record or to discuss new limitations will be denied. See MPEP 714.13 and 713.09.

***Contact Information***

14. Telephone inquiries regarding the status of applications or other general questions, by persons entitled to the information, should be directed to the group clerical personnel. In as much

Art Unit: 3726

as the official records and applications are located in the clerical section of the examining groups, the clerical personnel can readily provide status information. M.P.E.P. 203.08. The Group clerical receptionist number is (703) 308-1148.

If in receiving this Office Action it is apparent to applicant that certain documents are missing, e.g., copies of references cited, form PTO-1449, form PTO-892, etc., requests for copies of such papers or other general questions should be directed to Tech Center 3700 Customer Service at (703) 306-5648, or fax (703) 872-9301 or by email to [CustomerService3700@uspto.gov](mailto:CustomerService3700@uspto.gov).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc Jimenez whose telephone number is **703-306-5965**. The examiner can normally be reached on **Monday-Friday, between 5:30 am- 2:00 pm**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306 for regular communications and After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1148.

Other helpful telephone numbers are listed for applicant's benefit.

Allowed Files & Publication	(703) 308-6789 or (888) 786-0101
Assignment Branch	(703) 308-9723
Certificates of Correction	(703) 305-8309
Drawing Corrections/Draftsman	(703) 305-8404/8335
Petitions/Special Programs	(703) 305-9285
Terminal Disclaimers	(703) 305-8408
PCT Help Desk	(703) 305-3257

Application/Control Number: 09/667,186

Page 10

Art Unit: 3726

If the information desired is not provided above, or a number has been changed, please call the general information help line below.

Information Help line  
Internet PTO-Home Page

1-800-786-9199  
<http://www.uspto.gov/>

*MJ*  
MJ

April 8, 2004

*J. C. A. Rosen*  
Au 3726